Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC

In the Matter of

Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules	)	WT Docket No. 99-168

REPLY COMMENTS OF THE HARRIS CORPORATION

Introduction

The Harris Corporation, by its attorneys, hereby submits reply comments in response to comments filed on the Notice of Proposed Rulemaking ("Notice") in the above-captioned proceeding.[1] Harris directs its reply comments to the proposed emission mask limiting out-of-band signal levels. Harris supports the specifics of the proposed rule, and urges its adoption as proposed and its extension to all digital television broadcast operations licensed to operate on television channels 2-69.

Statement of Interest

The Harris Corporation is a global communications company with worldwide sales of $4 billion. Pertinent to this proceeding, Harris leads the industry in designing and manufacturing digital broadcast transmitters and related equipment, and distributes these products throughout the world. Harris also supplies equipment for a wide variety of other spectrum-based services. Harris therefore has substantial interest and deep expertise in ensuring spectrum integrity and promoting technical rules that minimize interference to other stations and services.

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[1] *Notice of Proposed Rulemaking* in WT Docket No. 99-168, FCC 99-97 (released June 3, 1999) ("*Notice*").

The Proposed Emission Mask Will Protect Other Communications

As Harris stated in its comments, the emission mask proposed in this proceeding, 43 + Log P watts or 80 dB, whichever is less,[2] is identical to that generally used in other services, including the Public Land Mobile Service[3] and the Domestic Public Fixed Services.[4] As the Commission notes, this rule automatically adjusts for power differences in limiting out-of-band emissions, up to its cap of -80 dB.

The Commission also proposes to require 110 dB suppression of second harmonic emissions from transmitters operating on channels 65-67 because these emissions fall within the 1559 and 1605 MHz band used by navigation satellites, such as GPS. As Harris noted in its comments, this level of suppression is extremely strict, and in fact is below the level that can be measured reliably with even the most advanced laboratory test instruments.[5] Nevertheless, -110 dB suppression could be reached at these frequencies by using a notch filter and Harris does not object to this level of suppression being adopted in this proceeding for second harmonic suppression for transmitters operating on channels 65-67.

As the Commission recognizes in the *Notice*,[6] Harris has asked the Commission to relax the 110 dB attenuation requirement generally while continuing to protect the harmonic GPS bands to the -110 dB level.[7] The rules proposed in this proceeding for all new licensees are

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2 *Notice* at para. 76.

3 *See* 47 C.F.R. § 22.359(a)(3), (b)(1)(iii), (b)(2)(iii).

4 *See* 47 C.F.R. § 21.106(a)(1)(iii), (a)(2)(ii).

5 *See* Advanced Television Technology Center, An Evaluation of the FCC Proposed RF Mask for the Protection of Adjacent Channel NTSC Signals, Document No. 96-02, note to Figure 2 (Oct. 22, 1996); and An Evaluation of the FCC FT Mask for the Protection of the DTV Signals From Adjacent Channel DTV Interference, Document No. 97-06, note to figure 2 (July 17, 1997).

6 *Notice* at para. 75.

7 *Notice* at n. 145.

consistent with Harris' request, and should be extended to channels 2-69 as well. Adopting the proposed emission mask for all digital operations would provide protection equivalent to that required of other services.

In an *ex parte* letter filed in this proceeding, the National Telecommunications and Information Administration (NTIA) recommends that the emission limit of –110 dB below the average transmitter power be applied to digital television transmitters operating in the 746-764 MHz and 776-794 MHz bands. NTIA states that this level of suppression will protect GPS operations, including precision navigation and landing operations.[8]

The U.S. GPS Industry Council also submitted comments in which it argues that the NTIA-recommended levels are insufficient to protect the GPS system, and recommends that the specific requirements be studied on a case-by-case basis.[9] The Council does not supply analysis or study specific to the 776-794 MHz band, however, nor does it supply evidence of any history of interference problems with the lesser standards in force today. Without analysis, the Council, "recognizing the desirability of a threshold," recommends a "default" level of –100 dBW/MHz.[10]

Neither the NTIA nor the Council provide any analysis to justify their recommendations that is specific to the use of this spectrum. However, a comprehensive report on risk assessment associated with using GPS as a navigation and landing system was released earlier this year by the John Hopkins University Applied Physics Laboratory. This study was performed at the request of the Federal Aviation Administration, the Air Transport Association, and the Aircraft Owners and Pilots Association.[11] It identifies sources of interference to the GPS system,

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8 NTIA, *Ex Parte* letter filed in Docket 99-168 on June 10, 1999.

9 Comments of the U.S. GPS Industry Council at 5.

10 *Id.*

11 VS-99-007 *GPS Risk Assessment Study Final Report*, The Johns Hopkins University Applied Physics Laboratory. This report is available on the Internet at <http://www.jhuapl.edu/transportation/aviation/gps>.

including television broadcast transmitters. A reading of this report indicates that the levels of suppression recommended by the NTIA and the Council to apply to all broadcast stations is unneeded and over regulatory.

The study takes specific note of the fact that there have been few reports of GPS receiver interference from the millions of transmitters currently operating under significantly less stringent rules. With regard to broadcast transmitters, it identifies broadcast operations on Channel 23 to be the most problematic, but even in this case reasonably concludes that the potential for interference could be managed by testing specific systems and adding filters to any television transmitter found to create interference with the GPS system.[12]

The lack of interference to the GPS system under today's emission mask rules indicates that a transmitter-specific solution applied when a problem actually arises would be a much more reasonable approach than requiring all broadcasters to shoulder the significant cost of unneeded filters. For example, the Commission could include in its rules the provision that "in the event of interference caused to any service, greater attenuation of out-of-band emissions may be required."

Harris estimates that this approach will result in a 10 to 20 percent cost savings for broadcasters in their purchase of digital television filter systems. Such cost savings are significant, especially for small broadcasters, and would facilitate a more rapid transition to digital television. Given that the *GPS Risk Assessment Study Final Report* indicates that adopting the stricter –110 dB suppression requirements would result in little to no additional protection as a practical matter, it would be in the public interest to adopt the emission mask requirement proposed in this proceeding, and to extend it to all television transmitters generally.

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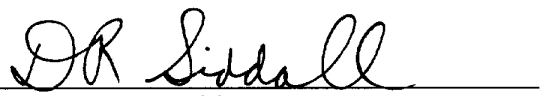
12 *Id.* at p. ES-3, Section ES.2.1.

Conclusion

For the above reasons, Harris supports adoption of the emission mask rule proposed in the *Notice*, and requests that it be applied to all digital broadcast transmitters.

Respectfully Submitted,

HARRIS CORPORATION

By: 

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August 13, 1999